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## EVALUATION OF THE PERFORMANCE OF UNBOUND AND BOUND GRANULAR MATERIALS UNDER REPEATED TRIAXIAL LOAD TEST

Unbound Granular Materials (UGMs) are extensively used as sub-base course materials around the world as they are capable to bear high traffic loads and are more economical as compared to bound materials. This research presents the relationship between resilient modulus and physical properties of NHA class A1-a and A1-b materials obtained from different parts of Khyber Pakhtunkhwa, province of Pakistan. This research investigates the effect of percentage of fines, moisture changes, stress level, source effect and change in gradation on the resilient modulus of Unbound Granular Materials (UGMs) and BGMs(cement treated) of flexible pavement. The water can intrude into the unbound base course layers and in the worst state can saturate the layers leading to premature pavement failures. An investigation is required to find the performance of different sub-base courses materials at optimum moisture, optimum towards dry condition and optimum towards saturated conditions. To investigate the physical properties of aggregates, conventional tests for aggregates (i.e. Los Angeles abrasion test, specific gravity, CBR) have been conducted, the results show that the aggregate used in this study falls well within the allowable limits. Performance test (resilient modulus test) (Mr) of selected materials were carried out using Repeated Load Triaxial (RLT) test in Taxila Institute of Transportation Engineering (TITE), UET Taxila. The results indicate that aggregates type, gradation of the materials, percentages fine and percentages moisture considerably affect the resilient modulus of UGMs and compare it with the result of BGMs. Moisture content has adversely affect on unbound sub-base course material especially when water increase from optimum to wet conditions. The results shows that materials which have lesser clayey particles (low P.I value) are more sensitive towards treating than those which have more clayey Particles (High P.I value).

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